Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended)   An information processor to analyze the right of access to a database having a data file in a form of a structured document, the information processor comprising:

a database storing an XML document;

a preliminary access rights analysis device which decides, based on path expressions describing retrieval conditions used in retrieval for the database and an access control policy describing access control rules, to which one of

1)   always permitted,

2)   always denied, and

3)   indeterminate

access right in the database retrieval using the path expressions corresponds, said preliminary access rights analysis device deciding said access rights without retrieving said XML document if said access right is always permitted or always denied, and wherein if said access right is indeterminate, then said database retrieval system accessing said XML document to determine an access right;

a query automaton generation unit for generating a query automaton from a path expression in which a retrieval condition for the database is described, wherein said path expression is extracted from a query requesting access to said database;

an access control automaton generation unit for generating an access control automaton from an access control policy in which an access control rule is described; ~~and~~

~~a logic~~ an operation unit having instructions for deciding access rights in database retrieval using the path expression by performing ~~logic~~ operations related to the query automaton generated by the query automaton generation unit and the access control automaton generated by the access control automaton generation unit, without accessing said data file stored in said database, said operation unit also having instructions for issuing a decision which allows access, or does not allow access, to said data in response to said query;

a path expression extraction unit for extracting the path expressions from a query expression specifying a retrieval method for the database; and

a query expression access right decision unit for deciding access rights in the database retrieval by the query expression based on decision results of access rights, which are obtained by the operation unit, for the individual path expressions extracted from the query expression.

2.   (Currently Amended)   The information processor of claim 1, further comprising a schema automaton generation unit for generating a schema automaton from a schema showing a structure of the data file stored in the database wherein the ~~logic~~ operation unit performs decision of the access right in consideration for the schema automaton generated by the schema automaton generation unit.

3.   (Original)   The information processor of claim 2, further comprising a path table control unit for controlling path table describing paths of the data file stored in the database wherein the schema automaton generation unit generates the schema automaton from the path table controlled by the path table control unit.

4.   (Cancelled)

5.   (Cancelled)

6.   (Currently Amended)   An information processor which analyzes access rights to a database having a data file comprising a structured document, the information processor comprising:

      <u>a database storing an XML document;</u>

a preliminary access rights analysis device which decides, based on path expressions describing retrieval conditions used in retrieval for the database and an access control policy describing access control rules, to which one of

1) always permitted,

2) always denied, and

3) indeterminate

an access right in the database retrieval using the path expressions corresponds, said preliminary access rights analysis device deciding said access rights without retrieving said XML document if said access right is always permitted or always denied, and wherein if said access right is indeterminate, then said database retrieval system accessing said XML document to determine an access right;

a query automaton generation unit for generating a query automaton from a path expression in which a retrieval condition for the database is described, wherein said path expression is extracted from a query requesting access to said database;

an access control automaton generation unit for generating an access control automaton from an access control policy in which an access control rule is described;

an operation unit having instructions for deciding access rights in database retrieval using the path expression by performing operations related to the query automaton generated by the query automaton generation unit and the

access control automaton generated by the access control automaton generation unit, without accessing said data file stored in said database, said operation unit issuing a decision which allows access, or does not allow access, to said data in response to said query;

a path expression extraction unit for extracting the path expressions from a query expression specifying a retrieval method for the database;

a query expression access right decision unit for deciding access rights in the database retrieval by the query expression based on decision results of access rights, which are obtained by the operation unit, for the individual path expressions extracted from the query expression;

a path table control unit for controlling a path table describing paths of a data file stored in the database; ~~and~~

an access right decision unit for selecting a predetermined path in the path table controlled by the path table control unit by a path expression describing a retrieval condition for the database, applying an access control policy describing access control rules and deciding an access right in database retrieval by the path expression with respect to the predetermined path;

a path expression extraction unit for extracting the path expressions from a query expression specifying a retrieval method for the database; and

a query expression access right decision unit for deciding access rights in the database retrieval by the query expression based on decision results of access rights, which are obtained by the access right decision unit, for the

individual path expressions extracted from the query expression, said selecting,

applying, ~~and~~ deciding, extracting, and deciding being performed prior to

retrieving said structured document in said database.

7.   (cancelled)

8.   (Cancelled)

9.   (Cancelled)

10.   (Currently amended)   A database retrieval system, comprising:

        a database storing an XML document; ~~and~~

        a preliminary access rights analysis device which decides, based on path

expressions describing retrieval conditions used in retrieval for the database

and an access control policy describing access control rules, to which one of

        1)   always permitted,

        2)   always denied, and

        3)   indeterminate

~~an~~ access right in the database retrieval using the path expressions

corresponds, said preliminary access rights analysis device deciding said

access rights without retrieving said XML document if said access right is

always permitted or always denied, and wherein if said access right is

indeterminate, then said database retrieval system accessing said XML document to determine an access right;

a query automaton generation unit for generating a query automaton from a path expression in which a retrieval condition for the database is described, wherein said path expression is extracted from a query requesting access to said database;

an access control automaton generation unit for generating an access control automaton from an access control policy in which an access control rule is described;

an operation unit having instructions for deciding access rights in database retrieval using the path expression by performing operations related to the query automaton generated by the query automaton generation unit and the access control automaton generated by the access control automaton generation unit, without accessing said data file stored in said database, said operation unit issuing a decision which allows access, or does not allow access, to said data in response to said query;

a path expression extraction unit for extracting the path expressions from a query expression specifying a retrieval method for the database; and

a query expression access right decision unit for deciding access rights in the database retrieval by the query expression based on decision results of access rights, which are obtained by the operation unit, for the individual path expressions extracted from the query expression.

11.   (cancelled)

12.   (Cancelled)

13.   (Original)   The database retrieval system of claim 10, further comprising the access rights analysis device including:

a path table control unit for controlling a path table describing paths of a data file stored in the database; and

an access right decision unit for selecting a predetermined path in the path table controlled by the path table control unit by a path expression describing a retrieval condition for the database, applying the access control policy describing the access control rules and deciding an access right in database retrieval by the path expression with respect to the predetermined path.

14.   (Cancelled)

15.   (Currently amended)   An access rights analysis method for analyzing the right of access to a database storing an XML document by use of a computer, comprising the steps of:

storing an XML document in a database;

deciding, based on path expressions describing retrieval conditions used in retrieval for the database and an access control policy describing access control rules, to which one of

1)   always permitted,

2)   always denied, and

3)   indeterminate

access right in the database retrieval using the path expressions corresponds, using a preliminary access rights analysis device, said preliminary access rights analysis device deciding said access rights without retrieving said XML document if said access right is always permitted or always denied, and wherein if said access right is indeterminate, then said database retrieval system accessing said XML document to determine an access right;

generating a query automaton from a path expression in which a retrieval condition for the database is described, generating an access control automaton from an access control policy in which an access control rule is described and storing the generated query automaton and access control automaton in a predetermined storage means, the path expression being derived from a received query; and

performing ~~logic~~ operations related to the query automaton and the access control automaton, which are stored in the predetermined storage means, and deciding an access right in database retrieval using the path

expression without checking the XML documents stored in the database, and issuing a decision allowing access or not allowing access to said database;

extracting the path expressions from a query expression specifying a retrieval method for the database using a path expression extraction unit; and

deciding access rights in the database retrieval by the query expression based on decision results of access rights for the individual path expressions extracted from the query expression using a query expression access right decision unit;

16.   (Cancelled)

17.   (Currently Amended)   A computer readable medium encoded with a computer program for analyzing the right of access to a database handling a data file as a structured document, by controlling a computer, the program causing the computer to function as:

a database storing an XML document;

a preliminary access rights analysis device which decides, based on path expressions describing retrieval conditions used in retrieval for the database and an access control policy describing access control rules, to which one of

1)   always permitted,

2)   always denied, and

3)   indeterminate

access right in the database retrieval using the path expressions corresponds, said preliminary access rights analysis device deciding said access rights without retrieving said XML document if said access right is always permitted or always denied, and wherein if said access right is indeterminate, then said database retrieval system accessing said XML document to determine an access right;

a query automaton generation means for generating a query automaton from a path expression in which a retrieval condition for the database is described , wherein said path expression is extracted from a query requesting access to said database;

an access control automaton generation means for generating an access control automaton from an access control policy in which an access control rule is described; ~~and~~

~~a logic~~ an operation means with instructions for deciding access rights in database retrieval using the path expression by performing operations related to the generated query automaton and access control automaton, without accessing said data file, said operation means also having instructions for issuing a decision which allows access, or does not allow access, to said data in response to said query;

a path expression extraction means for extracting the path expressions from a query expression specifying a retrieval method for the database; and

a query expression access right decision means for deciding access rights in the database retrieval by the query expression based on decision results of access rights for the individual path expressions extracted from the query expression.

18.   (Cancelled)

19.   (Currently Amended)   A program for analyzing the right of access to a database handling a data file, described in a form of a structured document, by controlling a computer, the program allowing the computer to function as:

a database storing an XML document;

a preliminary access rights analysis device which decides, based on path expressions describing retrieval conditions used in retrieval for the database and an access control policy describing access control rules, to which one of

1)   always permitted,

2)   always denied, and

3)   indeterminate

access right in the database retrieval using the path expressions corresponds, said preliminary access rights analysis device deciding said access rights without retrieving said XML document if said access right is always permitted or always denied, and wherein if said access right is indeterminate, then said

database retrieval system accessing said XML document to determine an access right;

a query automaton generation unit for generating a query automaton from a path expression in which a retrieval condition for the database is described, wherein said path expression is extracted from a query requesting access to said database;

an access control automaton generation unit for generating an access control automaton from an access control policy in which an access control rule is described;

an operation unit having instructions for deciding access rights in database retrieval using the path expression by performing operations related to the query automaton generated by the query automaton generation unit and the access control automaton generated by the access control automaton generation unit, without accessing said data file stored in said database, said operation unit also having instructions for issuing a decision which allows access, or does not allow access, to said data in response to said query;

a path table control means for controlling a path table describing paths of a data file stored in the database; and

an access right decision means for selecting a predetermined path in the path table controlled by the path table control unit by a path expression describing a retrieval condition for the database, applying an access control policy describing access control rules and deciding the presence of an access

right in database retrieval by the path expression with respect to the predetermined path without accessing said data file;

a path expression extraction means for extracting the path expressions from a query expression specifying a retrieval method for the database; and

a query expression access right decision means for deciding access rights in the database retrieval by the query expression based on decision results of access rights for the individual path expressions extracted from the query expression.

20.   (Cancelled)

21.   (Cancelled)